

REMARKS

Claims 1-29 are pending in the application. Claims 1, 4, 5, 9, 22, 23, 24, and 29 are independent claims.

Claims 5, 7, 22, and 23 stand rejected under 35 U.S.C. §102(b) as anticipated by Kiewit (U.S. Patent Number 4,107,626).

Claim 5 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". Kiewit discloses three or four transducers all mounted on the same substrate.

Claim 5 also specifies "processor means coupled to said output of said first amplifier". If the mixer 30 and counter 31 of Kiewit can be considered the same as the processor means of claim 5, they are clearly not connected to the output of an amplifier. In both Figures 1 and 2 of Kiewit, these components are coupled to the inputs of two amplifiers 28, 29 and 28a, 29a.

Claim 5 also specifies that "one of said first and second piezoelectric transducers is provided with two anti-reflection structures." [Emphasis added.] Kiewit discloses one embodiment where a single "wave absorber" 45 or 45b is located on a single substrate with two transducers on either side of it. This is the embodiment of Figures 1, 3a, and 3b of Kiewit. Kiewit discloses

another embodiment where three transducers are located between two wave absorbers 45a. This is the embodiment of Figure 2 of Kiewit.

From the foregoing, it may be appreciated that Kiewit neither discloses nor suggests two transducers on separate substrates, nor a processor means coupled to the output of an amplifier, nor one of the transducers having two anti-reflection structures. Thus, claim 5 is neither anticipated nor obvious over Kiewit.

Claim 7 depends from claim 5 and the arguments made above regarding claim 5 apply to claim 7 as well. In addition, the Examiner has not addressed the additional features of claim 7 which are clearly not disclosed or suggested by Kiewit. Thus, claim 7 is neither anticipated nor obvious over Kiewit.

Claim 22 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". As explained above, Kiewit discloses multiple transducers all on the same substrate.

Claim 22 also specifies "processor means coupled to said output of said first amplifier". If the mixer 30 and counter 31 of Kiewit can be considered the same as the processor means of claim 22, they are clearly not connected to the output of an amplifier. In both Figures 1 and 2 of Kiewit, these components are coupled to the inputs of two amplifiers 28, 29 and 28a, 29a.

From the foregoing, it may be appreciated that Kiewit neither discloses nor suggests two transducers on separate substrates, nor a processor means coupled to the output of an amplifier. Thus, claim 22 is neither anticipated nor obvious over Kiewit.

Claim 23 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". As explained above, Kiewit discloses multiple transducers all on the same substrate.

Claim 23 also specifies "processor means coupled to said output of said first amplifier". If the mixer 30 and counter 31 of Kiewit can be considered the same as the processor means of claim 22, they are clearly not connected to the output of an amplifier. In both Figures 1 and 2 of Kiewit, these components are coupled to the inputs of two amplifiers 28, 29 and 28a, 29a.

Claim 23 also specifies "third piezoelectric transducer being coupled to said elastic member within said hollowed central portion [of said elastic member]. It was noted that claim 23 lacked proper antecedent basis for "hollowed central portion". Claim 23 has been amended accordingly. Kiewit shows an elastic member having a hollowed central portion but there is no teaching or suggestion to place a transducer there.

From the foregoing, it may be appreciated that Kiewit neither discloses nor suggests two transducers on separate substrates, nor a processor means coupled to the output of an amplifier, nor a transducer in a hollowed central portion of an elastic member. Thus, claim 23 is neither anticipated nor obvious over Kiewit.

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as obvious over Kiewit (above) in view of Naito et al. (U.S. Patent Number 4,623,813) and Mishliborsky (U.S. Patent Number 4,718,287). The Examiner states that Kiewit discloses all of claims 1-3 except for the hermetic seal [or flexible sleeve]; that Naito an hermetic seal around SAW transducers; and that Mishliborsky discloses a bellows structure. The Examiner states that it would have been obvious to combine the references to protect the transducers from the environment.

Claim 1 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". Claim 1 also specifies "processor means coupled to said output of said first amplifier". As discussed above, Kiewit neither teaches nor suggests these elements. Thus, the teachings of the secondary references regarding bellows is irrelevant.

Claims 2 and 3 depend from claim 1 and the remarks regarding claim 1 apply to these claims as well.

Claims 4 and 24-29 stand rejected under 35 U.S.C. §103(a) as obvious over Kiewit (above) in view of Naito et al. (above) and Mishliborsky (above), and further in view of Ebata (U.S. Patent Number 4,249,418), Slobodnik et al. (U.S. Patent Number 4,489,289) and Inoue et al. (U.S. Patent Number 4,858,145). The Examiner states that the first three references teach all of claim 4 except the temperature sensor and all of claims 24-29 except the phase shift means. The Examiner further states that three additional references supply the missing elements and that it would have been obvious to combine these six references.

Claim 4 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 4.

In addition, claim 4 specifies "processor means coupled to said output of said first amplifier". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 4.

Furthermore, claim 4 specifies "an hermetically sealed temperature sensor." The three additional references make no

mention of hermetically sealing a temperature sensor and the Examiner has not addressed this issue.

For all of these reasons, claim 4 is patentable over the cited art.

Claim 24 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 24.

In addition, claim 24 specifies "processor means coupled to said output of said first amplifier". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 24.

For all of these reasons, claim 24 is patentable over the cited art.

Claims 25-28 depend from claim 24 and the remarks made regarding claim 24 apply to these claims as well. Moreover, the Examiner has not addressed the limitations of these claims.

Claim 29 specifies "a first piezoelectric transducer having a first substrate" and "a second piezoelectric transducer having a second substrate". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 29.

In addition, claim 29 specifies "processor means coupled to said output of said first amplifier". As discussed above, the primary reference, Kiewit, fails to teach or suggest these features. On this ground alone, this rejection fails with regard to claim 29.

Furthermore, claim 29 specifies "phase shift means coupled to said first amplifier for shifting the phase of said first output frequency by approximately 180 degrees". [Emphasis added.] The only reference disclosing phase shift means is Slobodnik et al. Which discloses a variable phase shift means coupled to a clock and operable by a control word to determine the amount of phase shift. This is not a teaching or suggestion of a phase shift means for shifting approximately 180 degrees as claimed.

For all of these reasons, claim 29 is patentable over the cited art.

Claims 9-21 [sic.] stand rejected under 35 U.S.C. §101 as claiming the same invention as claims 1-21 of prior U.S. Patent

Number 5,910,547 [sic.]. It is believed that the Examiner is referring to U.S. Patent Number 5,910,647 from which the present application claims priority and that the Examiner meant to refer to claims 9-29.

In an amendment filed June 28, 2001 in the international stage, the applicant stated that:

"The attached claims 9-29 are substantially the same as claims 1-21 of U.S. Patent 5,910,647 from which this application claims priority. The only difference between claims 9-29 and issued claims 1-21 is the correction of minor errors in claims 9, 12, 22-24, and 29."


As the Examiner aptly noted in the preamble to the double patenting rejection, the term "same invention" means "identical subject matter". [Emphasis added.] Although, the applicant admits that the claims in issue are "substantially the same", they are not identical. In fact, claims 9, 12, 22-24, and 29 of the instant application are actually broader than the corresponding claims in the '647 patent. The typographical errors which were corrected in the new claims rendered the issued claims unduly narrow in their literal interpretation. In particular, the claims in the issued patent specified the locations of the transmitter and receiver and did not clearly indicate in the claims that the locations of the transmitter and receiver could be reversed. Claims 9-29 of the instant application clearly indicate that the locations of the transmitter and receiver may be reversed. It is therefore respectfully submitted that the subject matter is not

identical as required to support a statutory double patenting rejection.

Since the instant application claims priority from the cited patent, both patents will expire together. Nevertheless, a terminal disclaimer is attached hereto which will overcome an obviousness type double patenting rejection which it is expected that the Examiner will raise.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,



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